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IAP59

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of:

Appeal No. _____

CLIFFORD L. JORDAN

Serial No.:	10/522,721	Examiner:	ALI, SHUMAYA B.
Filed:	11 March 2005	Art Unit:	3771
For:	COMBINED AIRCREW SYSTEMS TESTER (CAST)		

Attn: Board of Patent Appeals & Interferences

Paper No. 11

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to Appellant's Notice of Appeal filed on 27 March 2008, Appellant hereby appeals to the Board of Patent Appeals and Interferences from the rejection of claim 59, as set forth in the final office action mailed on 27 September 2007 (Paper No. 20070914) and an Advisory Action mailed on 25 April 2008 (Paper No. 20080416). A Petition for Extension of Time and its appropriate fee are being submitted with this Appeal Brief.

The Board of Patent Appeals and Interferences has jurisdiction under 35 U.S.C. §6(b).

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I. REAL PARTY IN INTEREST

Pursuant to 37 CFR §41.37(c)(1)(as amended), the real party in interest is:

SCOT INCORPORATED,
a corporation organized under the laws of the state of Illinois,
2525 Curtiss Street
Downers Grove, IL 60515
the United States of America

as evidenced by the Assignment executed by the inventors on the 8 March 2005 and recorded by the U.S. Patent and Trademark Office on 11 March 2005 at Reel 016414, Frame 0205.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals and no interferences known to Appellant, Appellant's legal representatives or the assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 through 53 and 65 through 70 have been canceled. Claim 59 stands finally rejected and is on appeal. Claims 54 through 58 and 71 through 76 are allowed and claims 60 through 64 are objected to as set forth in the Advisory Action mailed on 25 April 2008 (Paper No. 20080416).

IV. STATUS OF AMENDMENTS

No amendments to the claims are made subsequent to the final Office action mailed 27 September 2007 (Paper No. 20070914).

Paragraph [0001] of the specification was amended in an Amendment filed on the 27th of March 2008. Box 7 of an Advisory Action, Paper No. 20080416, confirmed that Appellant's Amendment was entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A functional diagram of a gas system for a combined aircrew system tester (CAST) is shown in FIG.1. The gas system of the tester provides two air sources. One, which may be considered as the "first unit" of Claim 59, is for testing a mask or a vest, and the other, which may be considered as the "second unit" of Claim 59, is for testing is for a G-suit (a suit designed to counteract the physiological effects of acceleration on an aviator or astronaut - called also called an anti-G suit). The air for the G-suit is provided through a G-suit port and the air for the mask/vest through the mask port. These air sources are used to perform maintenance and preflight testing of the pilot's life support equipment. The mask port air is used to test the pilot's oxygen mask and COMBAT EDGE gear. There are two modes of mask testing, 'normal' and 'PBG' (Pressure Breathing for G (acceleration force of gravity)).

Referring to Figs. 1 through 4, air for the mask starts by passing through an input filter 101. The ambient air is input through an inlet port. A screen mesh filter assembly screws into the inlet port to prevent particles from entering the air stream. The thread on the inlet port is designed so that it can accept a C2 (chemical) filter 246 used for chemical warfare. This feature makes it possible to use the tester in a chemical environment. All the air outputted by the tester passes through the C2 when it is installed.

Then, the air for the mask is compressed by a low-pressure compressor system 102, which may be considered as the "first compressor" of the "common gas system" of Claim 59.

The low-pressure compressor system 102 includes at least one blower but preferably includes at least three regenerative blowers 102a, 102b and 102c connected in series to generate the necessary pressure and flow. The output pressure is determined by the speed of the blowers 102a, 102b and 102c and how many blowers 102a, 102b and 102c are turned on. The voltage

applied to each of the blowers 102a, 102b and 102c controls the speed. If the voltage decreases, the speed decreases and the output pressure is decreased. The voltage is controlled by a speed control circuit, which is part of the speed control PCB (Printed Circuit Board, PCB3).

Then, the air for the mask passes through one of two flow sensors 106, 107, which are used to alert the user that his or her equipment is leaking and to measure the leak rate. One flow sensor is a high flow sensor 106 which measures flow from 0 to 10,000 cc/min (cubic centimeters per minute) and the other flow sensor is a low flow sensor 107 which measures flow from 0 to 300 cc/min. A mask control valve 104 and a low flow valve 105 determine which sensor is used. One of two valves 104 and 105 which are normally closed is open to permit the air to flow through one of the flow sensors 106 and 107. The output from the flow sensor 106 or 107 is fed into a digital indicator 274 (FIG.2) to indicate flow. The indicator 274 reads out in the appropriate units. Its range is set by an embedded processor on a main PCB (Printed Circuit Board, PCB1).

These sensors are excited with 10.0 VDC (voltage of direct current). At zero flow their output is 1.0 VDC (voltage of direct current). At full scale the output is 5.0 VDC (voltage of direct current). The low flow sensor 107 is not quite linear. To compensate for this, five linear curves are fitted to the flow versus voltage curve. The slopes of these five curves are programmed into the digital indicator 274 that is used to indicate flow.

Next, the air passes through a check valve 118 and flows out the mask port 242. The check valve 118 prevents foreign materials from entering the gas system of the tester. A pressure switch 111 and a mask pressure sensor 112 monitor the mask port pressure. They are used to control and limit the mask port pressure. The mask pressure sensor 112 converts pressure to voltage. The voltage is fed into the digital indicator 270 where it is converted to a digital signal, which is presented as number scaled in engineering units. This number is updated 13 times a second. The

indicator has three logic high outputs, which output when the pressure exceeds their set pressure. In addition, the pressure switch 111 is connected to the mask pressure sensor 112. The pressure switch 111 is normally closed, and is preferably set to open at 18 in (inch) H_2O.

A mask limit valve 114 and a backup mask limit valve 115 are also provided for controlling the mask port pressure.

The air for the G-suit is produced by multiple compressors 102a, 102b, 102c and 103. At pressures below 55 in H_2O, the low-pressure compressor system 102 compress the air. At pressures above 55 in H_2O, a high-pressure compressor 103, which may be considered as the "second compressor" of Claim 59's "common gas system", compresses the air. This is done to minimize the amount of time to inflate the G-suit. The low-pressure compressors (with regenerative blowers) 102a, 102b and 102c produce high flow at relatively low pressures while the high-pressure compressor 103 produces low flow but can compress the air to a higher pressure. This combination works particularly well when inflating the G-suit because when the G-suit inflates, initially there is a large change in volume without much change in pressure, and then, as the G-suit fills out and becomes firm, the change in volume slows down and the rate the pressure increases.

A G-suit regulator enable valve 109 and a G-suit regulator 108 are provided for regulating the G-suit pressure. The G-suit regulator enable valve 109 is normally closed. When the G-suit pressure increases up to a certain pressure, the G-suit regulator enable valve 109 is opened to vent the G-suit regulator 108.

A G-suit control valve 110 is further provided for controlling the G-suit pressure.

With this configuration, the present invention does not require a separate high pressure source of breathing air and oxygen.

As explained above, the present invention is self contained. Thus, a control panel of the

combined aircrew systems tester of the present invention has a plurality of switches and indicators for controlling the tests for the life support systems of an aircrew member.

FIG. 2 shows a preferred embodiment of the control panel, which may be considered as the "control panel" of Claim 59.

As shown in Fig. 2, the control panel 200 includes a 'mode select' switch 201, a 'pressure select' switch 202, a 'test select' switch 203, and a 'press to test' switch 204.

The "mode select switch" of Claim 59's "control panel" may be considered as mode select portion 201 includes a mode select switch 201A preferably provides for two dynamic flow leak testing (high leak ('LK-HI') 201D and low leak ('LK-LO') 201C), a G-suit leak testing ('LK-GS') 201B, and one mask testing ('mask') 201E.

The pressure select switch 202 is preferably provided for 41M, 43M, or 45M (where M stands for 1000). Thus, the air is provided at one of four positive pressures; normal, 41M, 43M, or 45M.

The test select switch 203 provides for a PBG breathing testing ('PBG'), a normal breathing testing ('normal'), and 'off'. The test select switch 203 is preferably a three-position toggle switch. The test select switch 203 drives two de-bouncers 332, 334, the PBG and the normal logic steps.

A leaking indicator 235 is also included in the control panel 200.

The "third unit" of Claim 59 may be considered as the communication section, which includes audio input A 222 and B 224, a carbon headset input 226, a press to test ('PTT') jack 228, a continuity status of a microphone 230, a continuity status of the earphone 232, a microphone "on" indicator 234, an audio select switch 236 that can be switched to continuity test mode 236a, 'LIS/TLK 1' (listen/talk 1) 236b, or 'LIS/TLK 2' 236c. A port for the goggle 238 and a 'G-suit' button 240 are included along with a mask port 242. Indicators 244a and 244b relating to the PBG

(pressure breathing for Gs) are also included. Reference 244b indicates that 'PBG timed out', 244a indicator concerns the 'PBG'. The control panel 200 also includes the filter 246. There are ports for the power 248 and the battery 250. A switch or indicator for tare 252 is along with a hold 254, and a reset 256 indicator or switch. A G-suit ready indicator 258 is also included along with a G-suit testing on/off switch 260 and a pressure control knob 262. The tester also includes a G-suit port pressure displays 268, a mask port pressure display 270, a time display 272, and a high and low flow display 274. The displays can be a digital display such as light emitting diodes, or liquid crystal display or other types of indicators.

During the operation of the tester, the aircrew does not wear COMBAT EDGE, the user selects a mask mode of operation by pressing the mode select switch 201. The user selects a desired breathing pressure by pressing the pressure select switch 202. Then the test select switch 203 is toggled to the 'normal' position, which starts air flow out of the mask port at slight positive pressure. Then the press to test button 204 is pushed to cause the air pressure to increase to the pressure selected. The air is preferably provided at one of four positive pressures; normal, 41M, 43M, or 45M. When the mask mode has been selected and the test select switch is in the 'normal' position, the mask control valve 104 opens permitting the air to flow out the mask port. When operating in the normal mask mode, the air outputted through the mask port is provided at a pressure from 1 to 10 in H_2O.

The PBG (Pressure breathing for G) breathing is used to perform preflight tests and fit tests while the users are wearing COMBAT EDGE. The users wearing COMBAT EDGE are required to take the preflight test on their masks at PBG breathing pressure level. This test is performed at a breathing pressure of 16 in H_2O with the G-suit not inflated. When the G-suit is not inflated, it is dangerous to breathe air at pressures much above 16 in H_2O. When the mode select switch 201

is set to 'mask' and the test select switch 203 is in the 'PBG' position, the air flows from mask port at normal pressure. When the press to test button 204 is depressed, the breathing pressure increases to 16 in H_2O. The user verifies that he or she is breathing normally, verifies proper mask functions and notes that their vest starts to inflate. Then the user momentarily stops breathing to test a leak. A light of the leaking indicator 235 will go out if there are no leaks greater than 5.5 lpm (liters per minute). When the press to test button 204 is pressed, the speed of the low-pressure compressor system 102 increases.

After a user is initially fitted with COMBAT EDGE equipment, a fit test is performed. This test is similar to the preflight test except the fit test is performed at 32 in H_2O. The user has to be sitting down to perform this test. The fit test starts by performing the preflight test. Then the mask port pressure is increased slowly to 32 in H_2O by adjusting the pressure control release and knob 262 until the air pressure reaches 32 in H_2O. Then the preflight test is repeated.

During preflight and fitting a red light turns on when flow exceeds 5.5 lpm. The user momentarily holds his or her breath to check for leaks. If there are no leaks, the leak light is turned off.

The voltage from the low flow sensor 107 is compared with a preset voltage that is equivalent to the sensor output when the flow is 5.5 lpm. When the voltage exceeds the preset voltage, the light of the leaking indicator 235 is turned on.

In order to do the preflight test safely, the G-suit has to be inflated. The low-pressure compressor system 102 and the high-pressure compressor 103 provide the air for the G-suit. When the G-suit switch 260 is turned on, the G-suit control valve 110 opens and the low-pressure compressor system 102 is turned on at its maximum operating speed so that the air rapidly fills the G-suit to its final approximate shape. When the G-suit pressure reaches 55 in H_2O, as sensed by

G-suit pressure sensor 113, the high-pressure compressor 103 takes over filling the G-suit to its final pressure. The output of the G-suit pressure sensor 113 is fed into the digital indicator/controller 268. The indicator 268 turns the input voltage into a digital signal and processes it, rescaling it into engineering units and outputting it in the form of a number presented on the indicator. The G-suit pressure is maintained at 60 in H_2O by the G-suit regulator 108. If the G-suit pressure exceeds 70 in H_2O, the high-pressure compressor 103 is turned off to limit the G-suit pressure to 70 in H_2O. After the G-suit pressure stabilizes at 60 in H_2O, the user turns off the G-suit switch 260.

The G-suit is periodically checked for leakage. To do this, the G-suit is pressurized to 138.4 in H_2O (5 psi, pounds per square inch) and monitored for a change in pressure over an interval of time.

When the mode select switch 201 is in 'LK-GS' and the G-suit switch 260 is turned on, the G-suit regulator enable valve 109 is turned on to disable the G-suit regulator 108, allowing the G-suit pressure to rise to pressures greater than 60 in H_2O, which is a normal G-suit operating pressure. The high-pressure compressor is turned off at 138.4 in H_2O. When the pressure reaches 138.4 in H_2O, the power to the G-suit control valve 110 and the high-pressure compressor 103 is turned off to limit the pressure to 138.4 in H_2O. Once the pressure stabilizes, the user turns off the G-suit switch 260 to close off the G-suit. The tare switch 252 is pushed for zeroing the time and G-suit pressure. At 120 seconds the hold button 254 is pressed for holding the indicated change in time and change in G-suit pressure. From these changes, the leak rate can be obtained.

When the mode select switch 201 is in the 'LK-HI' position (indicator 201D), the mask control valve 104 is opened. The low flow valve 105 remains off for directing all the flow through the high flow sensor 106.

When the mode select switch 201 is in the 'LK-LO' position (indicator 201C), the mask control valve 104 is closed. The low flow valve 105 is turned on for directing all the flow through the low flow sensor 107.

A second method used to verify the oxygen equipment seals is to measure a drop in pressure over an interval of time. The component under the test is attached to the mask port, such as the "first unit" of Claim 59, and is pressurized to 32 in H_2O by setting the mode to 'mask' and the test select switch 203 to 'PBG'. The press to test button 204 is pushed and the pressure control knob 262 is adjusted until air pressure reaches 32 in H_2O. After the pressure has stabilized, the press to test button 204 is released to cut off the air source. The tare switch 252 is pressed to start a timer and zero the pressure indicator, 268 and 270. At a prescribed time the hold switch 254 is pressed to hold the timer and the pressure indicator readings. If the change in pressure is less than a prescribed amount in the prescribed time, the leak rate is within tolerance.

The present invention is designed to address safety issues with the following features.

When performing COMBAT EDGE testing, it is necessary to expose the user to excessive breathing pressures. Exposure to excessive breathing pressure can hurt the user. It is only safe under curtain conditions and for limited periods of exposure. Under no circumstance should the breathing air pressure exceed 34 in H_2O.

The present invention compresses the filtered ambient air to pressures close to the maximum allowable output mask pressure, while the conventional testers start with air that is compressed to pressures that are orders of magnitude greater than the maximum allowable output mask pressure. If the step down regulation system in the conventional pressures completely fails, the user is exposed to pressures that many times greater than what is safe. On the other hand, the user of the present invention would be exposed to pressures not higher than the maximum

allowable mask output pressure.

As stated before, the blowers 102a, 102b, and 102c provide the breathing air. The maximum pressure that can be developed by each of the blowers 102a, 102b, and 102c is 21 in H_2O when being driven by main power supply voltage at zero flow. If all pressure limiting systems were to fail, the maximum breathing pressure that could be developed to 63 in H_2O at zero flow, which is comparable to the maximum safe pressure of 34 in H_2O. When the user is breathing, the pressure is significantly less.

Another safety feature of the present invention is a mask pressure limiting system. In the preflight test, if the pressure increases above 18 in H_2O, the power to the mask limit valve 114 is cut, venting the system through a check valve 119. This check valve 119 prevents back flow through the mask limit valve 114 when the user is inhaling. In addition, the mask port pressure is limited to 34 in H_2O under all circumstances. The backup mask limit valve 115 operating current is passed through a pressure limit switch 111 set to open at 34 in H_2O. The backup mask limit valve 115 is a normally open valve. When the pressure limit switch 111 opens, the operating current is interrupted to open the backup mask limit valve 115.

The method of controlling the CAST is described in more detail below. Fig. 4A through 4S illustrate schematic diagrams of sections 4A through 4S, respectively of the overall block diagram of Fig. 3 of the present invention. The schematics of 4A through 4S are sectioned to show the entire schematic of the present invention. Some portions may overlap in order to accurately show the connections between the individual elements.

The operation of the "common gas system" of Claim 59 may be considered as controlled by the main printed circuit board (PCB 1), which uses CMOS (complementary metal oxide semiconductor) logic to control the overall operation. There are two pressure sensors, two digital

indicators, five switches and one potentiometer that input and drive the logic functions located on the main PCB (Printed Circuit Board, PCB1). The logic outputs control the speed control PCB (PCB3), and the valves that control flow.

All logic inputs are derived from either switch closures or TTL (transistor-transistor logic) located in the digital indicators. They pass through de-bouncers. The de-bouncers clean up these inputs and turning them into single pulse square waves with CMOS logic high levels.

The outputs refer to either compressor motors or valves. The valve outputs and the high-pressure compressor output are located on the main PCB (PCB1). They include an opto isolator and power relays. This is done to protect the CMOS logic from inductive spikes that occur when switching a valve. The high-pressure compressor output is located on the main PCB (PCB1) and the low-pressure compressors outputs are located on the speed control PCB (PCB3).

A mode select circuit includes the mode select switch 201, a momentary push button driving a Johnson Counter (also known as a twisted-ring counter) (see FIG. 4D). The Johnson counter provides the 'MASK' for the mask testing, 'LK-HI' for the high-leak testing, 'LK-LO' for the low leak testing, and 'LK-GS' for G-suit leak testing. It drives four buffers, which drive four LEDs (light emitting diodes) 201B, 201C, 201D, 201E, which indicate the mode that is selected. The pressure select circuit works the same way.

The test select circuit starts with a three-position toggle switch 203, which drive two de-bouncers. The de-bouncer outputs are the 'PBG' and 'normal' logic steps. (See FIG. 4F)

The press to test switch 204 and the G-suit switch 260 drive two de-bouncers. Their outputs are the 'TST' and "GSUIT' logic steps.

With respect to the G-suit pressure sensor 113 and the mask pressure sensor 112, the output from the G-suit pressure sensor 113 is fed into a digital indicator 268. The indicator 268 turns the

input voltage into a digital signal and processes it, rescaling it into engineering units and outputting it in the form of a number presented on the indicator 268. It also provides a TTL logic high output at 55, 70 and 138.4 in H_2O. The indicator provides 10-volt excitation for the pressure transducer. The mask transducer (sensor) 112 works the same except it outputs TTL logic high outputs at 1, 18 and 34 in H_2O. (See FIG. 4, part O)

The G-suit regulator enable valve 109 is normally closed. It is turned on to vent the G-suit regulator 108 to regulate the G-suit pressure (GSP) to 60 in H_2O, which is the normal suit operating pressure. It is turned off when performing a G-suit leak test (LK-GS).

The G-suit control valve 110 is normally closed. In any mode select position other than 'LK-GS', the G-suit control valve 110 is turned on until the G-suit pressure reaches 70 in H_2O. In the 'LK-GS' position, the G-suit control valve 110 is turned on until the G-suit pressure reaches 138.4 in H_2O.

With respect to the low flow valve 105, this valve 105 is turned on until the mask pressure (MP) reaches 34 in H_2O when the press to test switch 204 is pressed in the 'LK-LO' position

The mask limit valve 114 is normally open. When the test select switch 203 is in 'normal', the mask limit valve 114 is closed when the MP (mask pressure) is less than 18 in H_2O. In the 'LK-HI' or 'LK-LO' or the test select in the 'PBG' position, the mask limit valve 114 is on until mask port pressure reaches 34 in H_2O.

The mask control valve 104 is normally closed. In the 'LK-HI' position, the mask control valve 104 is on until the mask pressure reaches 34 in H_2O. In the 'mask' position, the mask control valve 104 is on when the test select switch 203 is in the 'PBG' or 'normal' positions.

The backup mask limit valve 115 is normally open. It is closed at the same time the mask limit valve 114 is closed. Its power passes through the pressure switch 111. If the mask pressure

exceeds 34 in H_2O, the pressure switch 111 opens to cut off power to the backup mask limit valve 115. The backup mask limit valve 115 opens to reduce the mask port pressure.

The 'High-Pressure Compressor' output turns on the high-pressure compressor 103 at 55 in H_2O and off at 70 or 138.4 in H_2O. In the 'LK-GS' position, it turns off at 138.4 in H_2O.

The 'Low-Pressure Compressor 1' output turns on the low-pressure compressor 1 102a when the test select switch 203 is in either the PBG or 'normal' positions. If the mode select switch 201 is in the 'LK-HI' or 'LK-LO' position, the blower 102a is on. This is done to provide positive flow whenever the mask port is in use.

The 'Low-pressure Compressor 2' output and the 'Low-Pressure Compressor 3' output turn on the low-pressure compressor 2 as '102b' in FIG. 1 and the low-pressure compressor 3 as '102c' in FIG. 1 when the test select switch 203 is in the 'normal' or 'PBG' position and the mask pressure drops below 1 in H_2O. When the test switch 203 is in the 'normal' and the mode select switch is 'LK-LO' or 'LK-HI' position, the low-pressure compressor 2 and 3 102b and 102c are turned on when the press to test switch 204 is pushed. When the test switch 203 is in the 'PBG', the low-pressure compressor 2 and 3 102b and 102c are turned on when the press to test switch 204 is pushed and, after one minute, these two low-pressure compressors 102b and 102c are turned off.

The 'Full ON' output is used to turn on the three low-pressure compressors 102a, 102b, and 102 c of the low-pressure compressor system 102 at their maximum operating speed when they are used to inflate the G-suit. This output is high when the G-suit switch 260 is turned on if no output is required from the mask port. The 'Mask Port' output takes precedence over G-suit inflation.

If the 'Variable Speed Enable', '41 M Speed Enable', '43M Speed Enable' or '45M Speed Enable' is not turned on, the 'Normal Speed Enable' is on (high).

When 41M is selected, the press to test button 204 is pushed, and the test select switch 203 is in the 'normal' or 'PBG' position, the '41 M Speed Enable' is on (high).

When 43M is selected, the press to test button 204 is pushed, and the test select switch 203 is in the 'normal' or 'PBG' position, the '43M Speed Enable' is on (high).

When 45M is selected, the press to test button 204 is pushed, and the test select switch 203 is in the 'normal' or 'PBG' position, the '45M Speed Enable' is on (high).

When 'LK-HI' or 'LK-LO' or 'PBG' with the press to test button 204 is pushed, the 'Variable Speed Enable' is on provided the G-suit pressure is greater than 55 in H_2O. The output from the G-suit pressure transducer (sensor) 113 is compared with a preset level to determine whether condition is being met.

The high-pressure compressor is turned on by the 'HP CMPR ON' signal. The 'HP CMPR ON' goes high when the G-suit switch is turned on and the following conditions are met; the G-suit pressure is greater than 55 in H_2O but less than 138.4 in H_2O, and the G-suit pressure is less than 70 in H_2O or 'LK-GS' mode selected.

The speed control PCB (PCB3) provides power to the three low-pressure compressors 102a, 102b and 102c. The power provided to the low-pressure compressors voltage is variable. This is done to vary the compressors output pressure. The low-pressure compressor 1 102a is turned off and on independently of the low-pressure compressors 2 102b and 3 102c. The speed control section outputs one of four fixed voltages or a variable voltage to the compressors that are turned on. Three adjustable voltage regulators tied in parallel supply the compressor voltage. Five external variable resistors set the regulators output voltage. (See FIG. 4N)

The speed control PCB (PCB3) has eight logic inputs. The logic inputs set the variable speed control and determine which compressors are turned on. The logic inputs are 'Full On', 'the

Low-Pressure Compressor 1', 'the Low-Pressure Compressor 2 and 3', 'Normal Speed Enable', '41M Speed Enable', '43M Speed Enable', '45M Speed Enable', and 'Variable Speed Enable'.

The low-pressure compressor motor outputs include four power relays. Two power relays drive the low-pressure compressor 1 motor and the other two power relays drive the low-pressure compressor 2 and 3 motors. Opto isolators drive the power relays. This is done to protect the CMOS logic from inductive spikes that occurs when switching the motors. When the 'Full On' input goes high, one set of relays turns on, outputting 15 VDC (voltage of direct current) to all three low-pressure compressor motors 102a, 102b and 102c. When either or both of the second set relays turn on, the variable voltage from the voltage regulators is outputted to the appropriate motors.(See FIG. 4M and 4N)

The pressure control 262 located on the control panel 200 is the variable resistor that is inputted to the speed control board. It is bypassed when the variable pressure switch 290 is in the 'CONST' position 290a causing the mask port pressure to stay at 16 in H20. Otherwise the output pressure can be varied between 16 and 34 in H20 when the test select switch 203 is set to 'PBG'.

As part of preflight, the user verifies his or her communication equipment. The user attaches to the tester and talks into the microphone. The sound picked up by the microphone should be clearly heard with the earphones. Audio system is made up of a preamp and a power amp. Several different kinds of microphones can be inputted into the tester. There are four different microphone inputs. The primary input is 'audio A' 222. This input is configured to accept a 5-ohm dynamic microphone when the audio select switch 236 is in the LIS/TLK 1 (listen/talk) 236b. In the LIS/TLK 2 position 236c, it is configured to interface with an Electret microphone that requires 10-VDC (voltage of direct current) bias with 8 mA (milliamperes) current limit. In this position an audio input transformer and bias circuit is added to the input circuit. The output of the audio

input transformer is fed into the preamp. There are two carbon microphone inputs parallel together. The two inputs are the carbon headset jack 226 and the PTT (Press to talk) talk jack 228. These inputs 226 and 228 have 24-VDC bias current limited to 10 mA. The input from the carbon microphone is fed directly to the power amplifier bypassing the preamp. The primary audio output is through the audio A jack 222. In the LIS/TLK 1 236b, it is setup to output into a 10-ohm dynamic microphone. In the LIS/TLK 2 position 236c, it is designed to output to 600 ohm input impedance earphones. The 'audio B' jack 224 is always configured to accept 5 ohm dynamic microphone and output to a 10 ohm dynamic load. The audio A jack 222 also provides +28 VDC (voltage of direct current) up to 200 mA power. It can be used to drive an ANR (Active Noised Reduction) unit.

A built in continuity tester can be provided to trouble shoot the communication gear. When the audio select switch 236 is in the 'cont' (continuity) position 236a, the communication circuits turn into a continuity tester. The carbon microphone, dynamic microphone and dynamic headset output DC resistance is monitored. If the dynamic microphone input resistance is between 4 to 7 ohms, the microphone light 230 will turn green. If it is less than 2 ohms, the microphone light 230 will turn red. If the output resistance is between 8 to 12 ohms, the earphone light 232 will turn green. If the output resistance is less than 2 ohms, the earphone light 232 will turn red. If the carbon microphone input resistance is between 80 to 500 ohms, the microphone light 230 will turn green. If it is less than 20 ohms, the microphone light will turn red. The input/output resistance of these three circuits is determined by holding the current through input/output constant. Now the resistance is directly proportional to the voltage. This voltage is amplified and fed into a window comparator and a limit comparator. The window comparators control the microphone/earphone green lights. If the comparators input voltage falls within the upper and lower set points, the green

light will turn on. If the input voltage is less than limit comparator set voltage, the red light will turn on.

To perform a goggle test, the EEU-2P flash goggles or equivalent are attached to the tester. After 10 seconds, the PTT button 228 is pressed. The goggles will turn opaque if they are working. 28 to 32 VDC is supplied to the EEU-2P goggles through the goggle jack 238. This voltage has to be 27 VDC min (minimum voltage). when outputting 20ma into 1400 ohm. The shorted output current must be 70 mA minimum and not more than 100 mA maximum. This is accomplished with voltage regulator and current limiting circuits.

Fig. 5 illustrates a general block diagram of a portion of the present invention. The "common gas system" of Claim 59 may be considered to include a gas system unit 802 which includes elements such as valve and compressor units and a speed control unit (See PCB3). The gas system unit 802 is controlled by the main PCB (PCB1) which uses the logic unit 804 to control the overall operation (See FIG. 4). The logic unit 804 outputs control the speed control unit (See PCB3), and the valves that control the flow. The "third unit" of Claim 59 may be considered as communication unit 806, which is also included in the present invention and includes the audio unit 808 (See PCB2) which is connected to PCB1.

The present invention integrates a plurality of testers into one unit and yet requires less power than earlier systems. The unit runs on standard 115 or 230 VAC (voltage of alternating current), 47-440 Hz (hertz), 4 Amperes. Input requirements are 85-132/170-264 VAC 47-440 HZ (hertz) 400W (watts). The mask port pressure/flow output schedule is shown by the following table:

Table 1

Setting	@ 0 LPM in H_2O	@ 5.0 LPM in H_2O
NORMAL	3.25	1.75±.5
41M	5.8	4.00±.5
43M	8.25	6.00±.5
45M	10.5	8.00±.5
PBG	16-32	NA
LK HI	16-32	NA
LK LO	16-32	NA

The tester 100 can be run from an internal rechargeable battery pack as an alternative to alternating current input from an outside source connected to for example the battery port 250. The battery pack can be nickel metal hydride batteries accessible through a weatherproof side panel. Other types of batteries such as lithium-ion and lithium-polymer can also be used. The power cord for outside power source can be attached to the back panel when the console is mounted. A built in charger can charge the tester in one hour or less or 20 minutes on the average. The tester can run up to 8 hours or more from its internal rechargeable battery pack. The duration can be increased depending on the type and size of the battery.

The G-Suit port output pressure is shown by the following table:

Table 2

Setting	Output Press. in H_2O
G-suit on	58±1
G-suit leak test	0-150

An exemplar specification for the construction of embodiments of the present invention (CAST) contemplates:

The leak indication is shown by a leak above 5.5±.5 lpm (liters per minute). The flow indication is 0-10,000±25 sccm and 0-300±1 sscm. The pressure drop leak range is 0-5 lpm. The temperature limits for the operating range is 0°C to 50°C while for storage is -40°C to 75°C. The flash goggle power is 28+2 VDC (voltage of direct current), 70-100 ma (milliamperes), current limited to 100 ma (milliamperes) maximum. The active noise reduction (ANR) power is +28 ±4 VDC (voltage of direct current) 200 ma (milliamperes) minimum. The microphone input current is 8 mA (milliamperes) maximum at 10 VDC (voltage of direct current).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claim 59 is improperly rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 21 and 39 of U.S. Patent No. 6,820,616 B1.

A. **The Examining staff is granted no authority under 35 U.S.C. §121 to reject a claim filed in a divisional application under the doctrine of non-obviousness double patenting, when the applied art is "[a] patent issuing upon an application with respect to which a requirement for restriction under the section has been made," and the claim is pending in a divisional "application filed as a result of the requirement ... before the issuance of the patent on the other application."**

B. **35 U.S.C. §121 mandates an absolute prohibition (*e.g.*, *shall not* be used as a reference ... against a divisional application) of citation of Appellant's parent application to support any type of rejection of any claim in this divisional application.**

C. **The prohibition of the third sentence of 35 U.S.C. §121 is not limited by the style of the claims in the cited patent, or application, and in the divisional application.**

D. **Paper No. 20070914 fails to make a *prima facie* demonstration of obviousness of claim 59 over claims 21 and 39 of Appellant's parent application.**

VII. ARGUMENT

In support of this objection, and the accompanying rejection of claim 59, the Examiner asserted that,

> "Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 and 365(c) as follows:
>
> If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 120 and 365, a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet.
>
> For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications. If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29,2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application."

Appellant respectfully notes that neither 37 CFR §1.78(a) nor 37 CFR §1.78(d) impose these requirements; moreover, there is absolutely not one word written by the U.S. Congress in 35 U.S.C.§121 that purports to limit Appellant's ability to seek examination of non-elected claims as a consequence of the Examining staff's imposition of a requirement under 35 U.S.C. §121. This objection, and the accompanying rejection of claim 59, are improper. Their withdrawal is respectfully urged.

Double Patenting

Claim 59 is rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 21 and 39 of U.S. Patent No. 6,820,616. Appellant respectfully traverses this rejection for the following reasons.

Rejection of Claims Based On Nonstatutory Obviousness-Type Double Patenting

A. The Examining staff is granted no authority under 35 U.S.C. §121 to reject a claim filed in a divisional application under the doctrine of non-obviousness double patenting, when the applied art is "[a] patent issuing upon an application with respect to which a requirement for restriction under the section has been made," and the claim is pending in a divisional "application filed as a result of the requirement ... before the issuance of the patent on the other application."

Claim 59 is rejected under the doctrine of non-statutory, obviousness-type double patenting over claims 21 and 39 of Appellant's U.S. Patent No. 6.820.616 B1. In support of this rejection, the Examining staff previously argued that,

> "The limitation of a control panel with respect to Applicant's arguments against the double patenting rejection of claim 1, it is respectfully submitted that ... that applicant has been clearly shown the similarities in the corresponding claims."

Now, Paper No. 20070914 argues in an un-numbered paragraph, that,

> "the conflicting claims are not identical, they are not patentably distinct from each other because ... claim 59 **has everything as recited in the patented claim 21** including a controller. ***The only difference is*** *... a control panel.* ... The limitation of a control panel is also found in the patented claim 39 ... ."

What the Examiner has improperly ignored however, is that Appellant's *Application Data Sheet 37 CFR 1.76* expressly claims, under the *Domestic Benefit/National State Information*, is in the express language of Appellant's *Application Data Sheet 37 CFR 1.76*, that accompanied the filing of Appellant's above-captioned application, is a:

> Division application of [Appellant's] Prior Application Number 10208188 filing Date 2002-07-31 Patent Number 6820616 Issue Date 2004-11-23."

In the precise language and format of the Appellant's *Application Data Sheet 37 CFR 1.76*,

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Expired				Remove
Application Number	Continuity Type		Prior Application Number		Filing Date (YYYY-MM-DD)
10522721	a 371 of international		PCT/US03/19560		2003-07-17
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
10522721	Division of	10208188	2002-07-31	6820616	2004-11-23
Prior Application Status	Expired				Remove
Application Number	Continuity Type		Prior Application Number		Filing Date (YYYY-MM-DD)
10522721	non provisional of		60/308846		2001-08-01

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Under the statute however,

> "A patent issuing upon an application with respect to which a requirement for restriction under the section has been made, or on an application filed as a result of the requirement, shall not be used as a reference either in the Patent and Trademark Office ... against a divisional application or against the original application or on any patent issued on either of them if the divisional application is filed before the issuance of the patent on the other application."[1]

In other words, the above-captioned application (*a*) is a divisional application of U.S. Patent No. 6.820.616, and (*b*) was timely filed on the 11th of March 2005 during (*c*) the co-pendency of Appellant's PCT International application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST)*, which had been filed under Title 35 U.S. Code §365(c) on the 17th of July 2003 and duly

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[1] 35 U.S.C. §121.

assigned Serial No. PCT/US03/19560, as was claimed in Appellant's original specification,

> This application also makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from a provisional application entitled *Combined Aircrew Systems Tester (CAST)* filed in the United States Patent & Trademark Office on 1 August 2001, and there duly assigned Serial No. 60/308,846 and my U.S. patent application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST)* filed in the United States Patent & Trademark Office on 31 July 2002, and there duly assigned Serial No. 10/208,188 by that Office, which is now issued as U.S. Patent No. 6,820,616 on 23 November 2004. This application further makes reference to, incorporates the same herein, and claims all benefits accruing under Title 35 U.S. Code §365(c) of my PCT International application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST),* filed on 17 July 2003 and duly assigned Serial No. PCT/US03/19560.

Or, in the language of the now amended specification,

> This application is filed pursuant to 35 U.S.C. §121 as a Divisional of Applicant's Patent Application Serial No. 10/208,188 filed in the U.S. Patent & Trademark Office on the 31st of July 2002, which is now issued as U.S. Patent No. 6,820,616 on 23 November 2004. and assigned to the assignee of the present invention. All benefits accruing under 35 U.S.C. §120 from the parent application are also hereby claimed. This application also makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from a provisional application entitled *Combined Aircrew Systems Tester (CAST)* filed in the United States Patent & Trademark Office on 1 August 2001, and there duly assigned Serial No. 60/308,846 ~~and my U.S. patent application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST)* filed in the United States Patent & Trademark Office on 31 July 2002, and there duly assigned Serial No. 10/208,188 by that Office, which is now issued as U.S. Patent No. 6,820,616 on 23 November 2004~~. This application [[also]] further makes reference to, incorporates the same herein, and claims all benefits accruing under Title 35 U.S. Code §365(c) of my PCT International application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST),* filed on 17 July 2003 and duly assigned Serial No. PCT/US03/19560.

prior to the issue date of Appellant's Serial No. PCT/US03/19560. The instant, above-captioned U.S. application Serial No. 10/522.721 is a continuation of Appellant's U.S. Patent No. 6.588.243, and a divisional application of Appellant's U.S. Patent No. 6.820.616. Even the fact that such a requirement for a restriction may have been belatedly withdrawn in a subsequent Office action due to the Examiner's delayed recognition that all of the independent claims were allowable over the prior art is immaterial under the language of 35 U.S.C. §121, because Appellant had already been

subjected by the Examiner to the inconvenience, delay in obtaining an issue date and the unnecessary expense concomitant to a requirement imposed under 35 U.S.C. §121. Nothing in 35 U.S.C. §121 negates the prohibition that the parent application "shall not be used as a reference either in the Patent and Trademark Office ... against a divisional application ... if the divisional application is filed before the issuance of the patent on the other application"[2] even after the Examiner purports during the course of the conclusion of the examination, to have withdrawn a requirement earlier imposed under 35 U.S.C. §121; Appellant notes that when the Examiner examines the application on the basis of the Appellant's election prior to purporting to withdraw a requirement for election of species, but does not expressly accord the Appellant an opportunity to add claims directed to all of the non-elected species, the "withdrawal" is in name only, and is illusory because Appellant has been denied the opportunity to present claims specifically directed to the non-elected species to the exclusion of the elected species.

This rejection is therefore, contrary to law, because the sole requirement imposed by the foregoing excerpt of 35 U.S.C. §121 has been met, namely the filing on the 11th of March 2005 of Appellant's above-captioned application during the co-pendency of Appellant's PCT International application entitled *COMBINED AIRCREW SYSTEMS TESTER (CAST),* filed under Title 35 U.S. Code §365(c) on the 17th of July 2003 and duly assigned Serial No. PCT/US03/19560, as was claimed in Appellant's original specification

Absent Congressional action to modify 35 U.S.C. §121, neither the Director nor any member of the Examining staff has the authority to belatedly overrule the action taken by the Office in imposing a requirement for restriction under 37 CFR §1.142. This rejection is therefore, not sustainable on the evidence of record.

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[2] 35 U.S.C. §121.

B. 35 U.S.C. §121 mandates an absolute prohibition (*e.g.*, *shall not* be used as a reference ... against a divisional application) of citation of Appellant's parent application to support any type of rejection of any claim in this divisional application.

Claim 59 is rejected under the doctrine of non-statutory, obviousness-type double patenting over claims 21 and 39 of Appellant's U.S. Patent No. 6.820.616 B1. In support of this rejection, the Examining staff previously argued that,

> "The limitation of a control panel with respect to Appellant's arguments against the double patenting rejection of claim 1, it is respectfully submitted that ... that Appellant has been clearly shown the similarities in the corresponding claims."

Now, Paper No. 20070914 argues in an un-numbered paragraph, that,

> "the conflicting claims are not identical, they are not patentably distinct from each other because ... claim 59 **has everything as recited in the patented claim 21** including a controller. *The **only difference** is ... a control panel.* ... The limitation of a control panel is also found in the patented claim 39 ... ."

What the Examiner has improperly ignored however, is that Appellant's *Application Data Sheet 37 CFR 1.76* expressly claims, under the *Domestic Benefit/National State Information*, using the express language of Appellant's *Application Data Sheet 37 CFR 1.76* which accompanied the filing of Appellant's above-captioned application, is sufficient to invoke the absolute prohibition (*e.g.*, ***shall not*** **be used as a reference ... against a divisional application**) of 35 U.S.C. §121 against citation of Appellant's parent application to support any type of rejection of any claim in this divisional application. This rejection is therefore illegal under 35 U.S.C. §121. Its withdrawal is respectfully urged.

C. The prohibition of the third sentence of 35 U.S.C. §121 is not limited by the style of the claims in the cited patent, or application, and in the divisional application.

Claim 59 is rejected under the doctrine of non-statutory, obviousness-type double patenting.

The third sentence of 35 U.S.C. §121 applies that prohibition against the patent, or application itself, and that prohibition is not limited by either the style, format or even the content of the claims in the divisional application. Moreover, as *TiVo, Inc. v. Echostar Communications Corporation, et al.* has explained, "hardware claims" may be written in both a "process" style (*e.g.* claim 1 in *TiVo*) and in an "apparatus" style (*e.g.* claim 32 in *TiVo*). Consequently, the claims presented in a divisional application that are directed to the non-elected subject matter of Group II defined in Paper No. 4 may be written either in an "apparatus" style or in a "process" style.

Claim 59 the cooperative relation between the "control panel" and Appellant's "first unit", "second unit", "third unit", "common gas system", "mode select switch" and the "first compressor" and the "second compressor." The particular operational relationships between the structural features of claim 59 define the "method of operating a gas system and method of testing" of non-elected Group II (*e.g.*, "compressing the air when the pressure ... is below ..." and "compressing the air when the pressure ... is equal to ...") of Paper No. 4. Consequently, the prohibition of 35 U.S.C. §121 prohibits the citation of the parent to which the requirement for restriction was applied, to support a double patenting rejection of claim 59 in the instant divisional application. The Board is accordingly urged to refuse to sustain this rejection.

D. Paper No. 20070914 fails to make a *prima facie* demonstration of obviousness of claim 59 over claims 21 and 39 of Appellant's parent application.

Appellant again notes that claim 59 is rejected under the doctrine of non-statutory, obviousness-type double patenting over claims 21 and 39 of Appellant's U.S. Patent No. 6.820.616 B1. In support of this rejection, the Examining staff previously argued that,

> "The limitation of a control panel with respect to Appellant's arguments against the double patenting rejection of claim 1, it is

> respectfully submitted that ... that Appellant has been clearly shown the similarities in the corresponding claims."

Now, Paper No. 20070914 argues in an un-numbered paragraph, that,

> "the conflicting claims are not identical, they are not patentably distinct from each other because ... claim 59 **has everything as recited in the patented claim 21** including a controller. ***The only difference is*** *... a control panel* .... The limitation of a control panel is also found in the patented claim 39 ... ."

This assertion of Paper No. 20070914 is factually erroneous on the record before the Board. The "control panel" is not a single, off-the-shelf item, and there is no evidence of record which would suggest that the "control panel" defined by rejected claim 59 is, in the sense of *KSR International*, an off-the-shelf item known to have been previously used as defined by claim 59.

Moreover, what the Examiner has improperly ignored however, is that claim 59 defines a structure that is patentably distinguishable from patent claim 21. The underlying assertion of the Examining staff that "***The only difference is*** *... a control panel* ..." is erroneous. Contrary to the Examiner's assertion, other differences do in fact exist because claim 21 defines a structure which incorporates, *inter alia*, flow sensors and pressure sensors, and pressure valves. This structure is not defined by claim 59.

Claim 59 however, defines a "control panel" and the cooperative relation between the "control panel" and Appellant's "first unit", "second unit", "third unit", "common gas system", "mode select switch" and the "first compressor" and the "second compressor." This structure is nowhere defined by either patent claim 21 nor its parent claim 19. Moreover, claim 21 does not encompass Appellant's "mode select switch." Furthermore, this cooperative relationship between these structural features of claim 59 is not found in patent claim 21. Consequently, the assertion of the Examining staff that "***The only difference is*** *... a control panel* ...", is incorrect and false.

Claim 39, which does define a "control panel" and its operational structure, does not depend upon patent claim 21. Moreover, claim 39 does not encompass Appellant's "mode select switch" defined by claim 59. Consequently, the assertion of the Examining staff that "The limitation of a control panel is also found in the patented claim 39 ...", is incorrect and false.

In order to make a *prima facie* demonstration of obviousness under 35 U.S.C. §103(a), "all the elements of" the pending claims must be "accounted for in the prior art relied upon in this record."[3] Even ignoring *arguendo* the impropriety of the citation of Appellant's parent application against a claim in this divisional application, patent claim 21 does not encompass Appellant's "mode select switch" set forth in rejected claim 59. These differences may not be ignored in a determination of obviousness *vel non*. Moreover, claim 59 is not a claim that defines "a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field" as was found in *KSR Int'l Co., v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1391 (2007), but a claim that defines a single structure that may be used advantageously to test all the aircrew's life support equipment. As explained in Appellant's originally filed specification, embodiments defined by claim 59 do not require anything more than commonly available local power to operate, and defines a structure that could be used in operation in a chemical environment. Embodiments of claim 59 do not require a separate high-pressure source of breathing air or oxygen, and have the ability to significantly reduce supporting man-hours, deployment costs and mobility footprint when testing related units of a mask, suit and the associated communication system for a single unit of an aircrew system.

Neither is claim 59 governed by *Perricone v. Medicis Pharmaceutical*, 77 USPQ2d 1321,

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[3] *In re John B. Sullivan, et al.*, ____ F.3d ____, ____ U.S.P.Q.2d ____ (Fed. Cir. 2007)(citation still unavailable).

1324-25 (Fed. Cir. 2005) where the Court of Appeals upheld a finding of invalidity of certain claims based upon double patenting and a determination that both of the plaintiff's patents disclosed essentially the same subject matter, because in *Perricone*, no requirement for restriction was ever issued by the Office under 35 U.S.C. §121. Here, claim 59, although written in apparatus format, is directed to the subject matter of non-elected Group II, namely the operational aspects of a gas system and a method of testing. The prohibition of the third sentence of 35 U.S.C. §121 is directed to the citation of one "application", or" patent", against another "application", or " patent", and not as is suggested by the Examiner here, to the style (*e.g.*, method or apparatus) of the claims in the application. The Board is respectfully urged to refuse to sustain this rejection.

Conclusion

The Court of Appeals carefully explained in its decision for *TiVo, Inc. v. Echostar Communications Corporation, et al.*, that "hardware claims" may be written in both a "process" style (*e.g.* claim 1 in *TiVo*) and in an "apparatus" style (*e.g.* claim 32 in *TiVo*). Similarly, claims directed to the particular process identified in Group II in Paper No. 4 issued on the 21st of May 2003 in Appellant's parent application, are not restricted to solely the "method" format, because the third sentence of 35 U.S.C. §121 speaks of "patents" and "applications" rather than "claims" or of "methods", "apparatus", "machine", "manufacture" or even "composition of matter." Rather, the question is one of "invention" as is expressly stated in the second sentence of 35 U.S.C. §121, and as has been noted in *TiVo*, an invention may be defined in the format of either "apparatus" or "process." Consequently, an obviousness type double patenting rejection may not be grounded upon the format or style of a claim.

Moreover, the claims presented in a divisional application that are directed to the non-elected subject matter of Group II defined in Paper No. 4 may be written either in an "apparatus" style or in a "process" style. Claim 59 is drawn to the subject matter of non-elected Group II, and defines the process of regulating the operational relationships between the structural features of claim 59, a "method of operating a gas system and method of testing" of non-elected Group II (*e.g.*, "compressing the air when the pressure ... is below ..." and "compressing the air when the pressure ... is equal to ...") set forth in Paper No. 4. Consequently, the prohibition of 35 U.S.C. §121 prohibits the citation of the parent to which the requirement for restriction was applied, to support a double patenting rejection of claim 59.

The structure of rejected claim 59 is nowhere defined by either patent claim 21 nor its parent claim 19. Moreover, patent claim 21 does not encompass Appellant's "mode select switch."

Furthermore, this cooperative relationship between these structural features of claim 59 is not found in patent claim 21. Consequently, two-way distinctiveness exists, and the patent claims fail to make a *prima facie* showing of obviousness. Consequently, the belated presented assertion by the Examiner in Paper No. 20070914 that:

> "the conflicting claims are not identical, they are not patentably distinct from each other because ... claim 59 **has everything as recited in the patented claim 21** including a controller. *The **only difference** is ... a control panel.* ... The limitation of a control panel is also found in the patented claim 39 ... ."

is, on the administrative record before the Board, factually erroneous because there is a complete dearth of evidence in the administrative record which shows either the constituent components defined by Appellant's "control panel" or Appellant's "mode selection switch." Additionally, the Examiner's assertion about "patented claim 39" is factually incorrect, as is demonstrated by a comparison of patent claim 39 with Appellant's rejected claim 59.

In view of these errors on the administrative record, the Board is respectfully urged to refuse to sustain this rejection of claim 59.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

Claim on Appeal (59)

59. (Previously Presented) An apparatus for testing aircrew systems, said apparatus characterized by:

a first unit configured to test a mask;

a second unit configured to test a G-suit;

a third unit configured to test a communication systems;

a common gas system integrated into said first unit and said second unit, said common gas system characterized by a first compressor and a second compressor producing a lower flow and a higher pressure than said first compressor, said first compressor compressing air when a pressure of an item to be tested is below a preset pressure value, and said second compressor compressing the air when the pressure of the item to be tested is equal to or over the preset pressure value; and

a control panel coupled to each of the first unit, the second unit, the third unit, and the common gas system, the control panel including a mode select switch for controlling flow of air compressed by the first compressor or the second compressor.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None.

* * *